

REMARKS

Claims 18-29 are pending in the application. Claims 18-29 stand rejected.

Reply to the Rejection of Claims 19 and 20 under 35 U.S.C. § 112, 1st Paragraph

Claims 19 and 20 are rejected as failing to comply with the written description requirement. For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 19 and 20 as failing to comply with the written description requirement under 35 U.S.C. § 112, 1st paragraph.

The Examiner alleges that Applicants have not provided adequate written description for "high amylose starch". It is well known by those skilled in the art that, when fractionated, most natural starches comprise 20 to 25 % amylose (linear polymer), with the remaining starch component being amylopectin (branched polymer) (see, *e.g.*, U.S. Patent No. 7,112,718, col. 1, lines 43-53). These starches can be genetically modified to increase or decrease the amylopectin or amylose content. For starch that is corn based, high amylose starch typically refers to starch isolated from hybrid corn plants having at least about 40% amylose (see, *e.g.*, Thomas, David J. and Atwell, William A., Starches, p. 5, Eagan Press, St. Paul (1999) attached hereto). Therefore, as the term "high amylose starch" is readily understood by the skilled practitioner, one reading the present disclosure would understand the meaning of high amylose starch.

For at least these reasons, withdrawal of the rejection of claims 19 and 20 under 35 U.S.C. § 112, 1st paragraph is respectfully requested.

Reply to the Rejection of Claims 18-29 under 35 U.S.C. § 112, 2nd Paragraph

Claims 18-29 are rejected as being indefinite. For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 18-29 as being indefinite under 35 U.S.C. § 112, 2nd paragraph.

Regarding claim 18, the Examiner states that it is unclear whether Applicants are claiming a composition comprising at least amylose-containing starch, or a composition

comprising at least one amylose-containing starch. Applicants assert that there is no difference in such claim language and therefore fail to understand what the Examiner finds objectionable.

With respect to the Examiner's remarks that "applicant has employed the term comprising allowing for the inclusion of any other component into the composition" and therefore it is unclear what 'at least amylose-containing starch would further limit', Applicants respectfully instruct the Examiner that, as correctly noted by the Examiner, the term "comprising" is non-limiting, and therefore the composition should have at least amylose-containing starch, but can have other ingredients as well. Such claim language does not require the 'at least amylose-containing starch' to further limit the composition. Rather, dependent claims 19-24 serve to provide such further limitations.

Regarding the term "stabilizing", it is clear from the 'Background of the Invention' that the present invention is directed towards a solution for maintaining the vibrancy and durability of artificially colored hair over time (*i.e.*, maintaining the same hair color over time) as opposed to having the hair color fade or change during normal hair treatment (*e.g.*, washing and styling) or exposure to the environment. "Stabilizing" is defined to mean resistant to change – here, the change being in hair color as noted in the specification. The Examiner understands this correctly, and as such, the claim is not unclear.

Regarding claim 20, those skilled in the art understand that amylose is a component of starch. Claim 20 merely states the starch comprise at least 50% by weight amylose. Accordingly, claim 20 is clear.

For at least these reasons, withdrawal of the rejection of claims 18-29 under 35 U.S.C. § 112, 2nd paragraph is respectfully requested.

Reply to the Rejection of Claims 18 and 21-29 under 35 U.S.C. § 102(b)

Claims 18 and 21-29 are rejected as being anticipated by U.S. Patent No. 6,365,140 to Melby *et al.* ("Melby"). For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 18 and 21-29 as lacking novelty over Melby.

Melby discloses modified stable starch solutions containing high levels of the modified starch that are useful in cosmetic mediums for treating a keratin-containing substrate (Abstract). Preferably the cosmetic medium is a hair care product such as a shampoo, conditioner, styling

product, rinse or hair coloring composition, or a skin care product such as a cleaner, lotion or cream (col. 9, lines 21-25). Only hair shampoos and skin moisturizers are exemplified. The starch utilized in the solution is preferably a cationically modified starch, and the starch base from which the cationically modified starch is derived can come from various sources such as potato, corn, rice, tapioca or wheat (col. 7, lines 39-40 and 65-67). The starch solution further contains stabilizers (col. 7, lines 18-23). A particularly preferred embodiment consists of use in the form of a shampoo for washing the hair (col. 12, lines 41-42).

Claim 18 has been amended to incorporate the limitation of former claim 19, now cancelled. As Melby does not teach or suggest the use of high amylose starches, Melby cannot be said to anticipate the presently claimed invention.

For at least these reasons, withdrawal of the rejection of claims 18 and 21-29 under 35 U.S.C. § 102(b) is respectfully requested.

Reply to the Rejection of Claims 18, 24 and 25 under 35 U.S.C. § 102(b)

Claims 18, 24 and 25 are rejected as being anticipated by European Patent No. 0 469 232 to Inoue ("Inoue"). For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 18, 24 and 25 as lacking novelty over Inoue.

Inoue discloses material for hair cosmetics and hair cosmetics capable of curing hair damaged by cold permanent wave treatment, hair coloring treatment, etc., and improving the color, gloss, feel and combing smoothness of the hair (Abstract). The material contains at least one ingredient selected from corn extract obtained by use of sulfurous acid water solution, water-soluble natural sugar, blood plasma, shellac, keratin, carrageenan, soluble cellulose, amylose, and an acrylic copolymer (Abstract). According to Inoue, amylose is added to a hair cosmetic to give "a water retention property to the hair cosmetic". No use of amylose is exemplified.

Claim 18 has been amended to incorporate the limitation of former claim 19, now cancelled. As Inoue does not teach or suggest the use of starches, much less high amylose starches, Inoue cannot be said to anticipate the presently claimed invention.

For at least these reasons, withdrawal of the rejection of claims 18, 24 and 25 under 35 U.S.C. § 102(b) is respectfully requested.

Reply to the Rejection of Claims 19 and 20 under 35 U.S.C. § 103(a)

Claims 19 and 20 are rejected as being unpatentable over Melby. For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 19 and 20 as being unpatentable over Melby.

As previously noted, Melby discloses modified stable starch solutions containing high levels of the modified starch that are useful in cosmetic mediums for treating a keratin-containing substrate. The Examiner states that "[b]ased on Applicants [*sic*] admission on the record of the amylose containing starches being obvious variants of each other", it would be obvious to one skilled in the art to use a high amylose containing starch in place of the nonionically modified or cationically modified corn starch of Melby with the expectation of making a similar hair care product yielding similar results.

Firstly, the 25 June 2007 Restriction requirement was directed towards ten (10) different species of amylose-containing starch, of which two were base starches (corn and potato – species 6 and 9), five were chemically modified starches (species 1-5), one was an enzymatically modified starch (to reduce molecular weight – species 8), and two were pregelatinized to render them cold-water soluble (species 7 and 10). All ten species possessed one property in common and therefore were related to each other in that they each contained amylose.

Secondly, none of the species listed were waxy starches or high amylose starches. Such starches would be further species that were not addressed in the restriction requirement. As high amylose starches were not included in the Restriction requirement, it cannot be said that high amylose starches are obvious variants of the species in the Restriction requirement as such starches were not argued by Applicant.

Finally, as Melby makes no reference whatsoever to high amylose starches, it cannot be said that Melby provides motivation to one skilled in the art to use such starches, particularly since Melby is focused on chemically modified starches (cationic or nonionic) in an aqueous solution for use in personal care compositions.

For at least these reasons, withdrawal of the rejection of claims 19 and 20 under 35 U.S.C. § 103(a) is respectfully requested.

Reply to the Rejection of Claims 19 and 20 under 35 U.S.C. § 103(a)

Claims 19-23 and 26-29 are rejected as being unpatentable over Inoue. For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 19-23 and 26-29 as being unpatentable over Inoue.

Inoue discloses material for hair cosmetics and hair cosmetics capable of curing hair damaged by cold permanent wave treatment, hair coloring treatment, etc., and improving the color, gloss, feel and combing smoothness of the hair. As admitted by the Examiner, Inoue does not teach or suggest high amylose starches, or cationically or nonionically modified starches. The Examiner states that "[b]ased on Applicants [*sic*] admission on the record of the amylose containing starches being obvious variants of each other", it would be obvious to one skilled in the art to use a high amylose containing starch in place of Inoue's corn starch component with the expectation of making a similar hair care product yielding similar results.

Firstly, the 25 June 2007 Restriction requirement was directed towards ten (10) different species of amylose-containing starch, of which two were base starches (corn and potato – species 6 and 9), five were chemically modified starches (species 1-5), one was an enzymatically modified starch (to reduce molecular weight – species 8), and two were pregelatinized to render them cold-water soluble (species 7 and 10). All ten species possessed one property in common and therefore were related to each other in that they each contained amylose.

Secondly, none of the species listed were waxy starches or high amylose starches. Such starches would be further species that were not addressed in the restriction requirement. As high amylose starches were not included in the Restriction requirement, it cannot be said that high amylose starches are obvious variants of the species in the Restriction requirement as such starches were not argued by Applicant.

With respect to the Examiner's remarks concerning the "corn starch component" of Inoue, this component is acidically modified to obtain extracts (albumin, globulin and 16 amino acids) to provide nutrition to the hair and adhesion (p. 3, lines 6-7). Nowhere does Inoue refer to amylose-containing starch for stabilizing artificial color on hair. Instead, Inoue only states that amylose can be added to a hair cosmetic to provide water retention to the hair cosmetic (p. 6, line 5). Inoue exemplifies the use of a natural polysaccharide (PRURAN, a sugar), blood plasma and natural resin shellac in a hair coloring agent for improving the stability of hair color (Example 5).

Accordingly, one skilled in the art considering Inoue would not be motivated to utilize high amylose starches for improving color stability as Inoue provides no such suggestion.


Finally, as Inoue makes no reference whatsoever to high amylose starches, it cannot be said that Inoue provides motivation to one skilled in the art to use such starches, particularly since Inoue is focused on a variety of materials, none of which are high amylose starches, for use in personal care compositions.

For at least these reasons, withdrawal of the rejection of claims 19-23 and 26-29 under 35 U.S.C. § 103(a) is respectfully requested.

It is believed that the above remarks and amendments place the application in condition for allowance, and such allowance is respectfully requested.

Respectfully submitted,

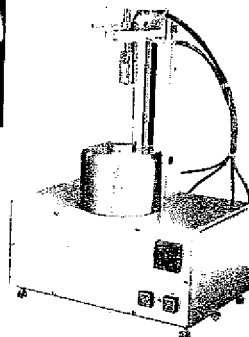
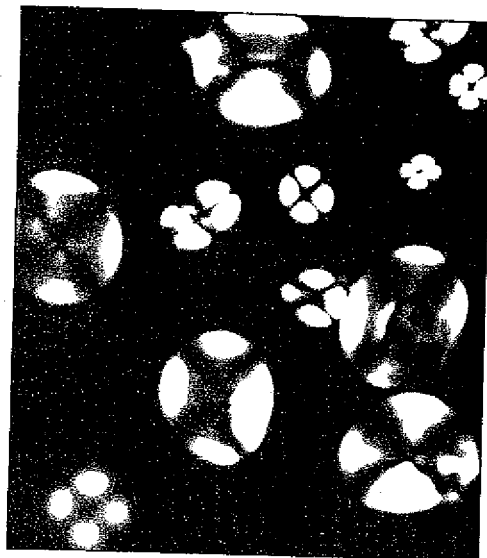
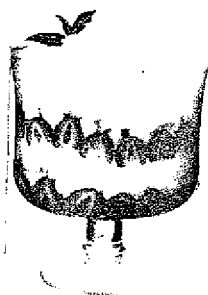
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Amylopectin

Branched
 α -1,4 and α -1,6
 50–500 million
 Weak
 Non-gelling to soft
 Reddish brown

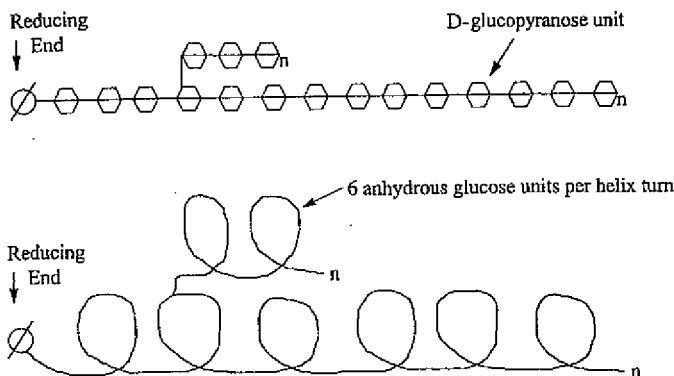


Fig. 1-4. Amylose models. Amylose can be depicted as either a straight chain or a helix.

plex" (Fig. 1-5), as it is often called, can alter the properties of the starch. As depicted, the hydrophobic core of the amylose helix complexes with the hydrophobic constituent. Amylose complexation with fats and food emulsifiers such as mono- and diglycerides can shift starch *gelatinization* temperatures, alter textural and viscosity profiles of the resultant *paste*, and limit *retrogradation*. (Gelatinization, pasting, and retrogradation are discussed in Chapter 3.)

Another well-known attribute of amylose is its ability to form a gel after the starch granule has been cooked, i.e., gelatinized and pasted. This property is evident in the behavior of certain amylose-containing starches. *Corn starch*, wheat starch, rice starch, and particularly *high-amylose corn starch* isolated from hybrid corn plants are usually considered gelling starches. Gel formation is primarily the result of the reassociation (i.e., retrogradation) of solubilized starch polymers after cooking and can occur quite rapidly with the linear polymer amylose.

AMYLOPECTIN

The literature proposes several models for helical configurations, branch chains, cluster patterns, and molecular dimensions of amylopectin. The evolution of the amylopectin model has progressed with the increasing sophistication of biochemical techniques.

Gelatinization—Collapse (disruption) of molecular orders within the starch granule manifested by irreversible changes in properties such as granular swelling, native crystalline melting, loss of birefringence, and starch solubilization.

Paste—Starch in which a majority of the granules have undergone gelatinization, giving it a viscosity-forming ability. Pasting involves granular swelling and exudation of the granular molecular components.

Retrogradation—Process during which starch chains begin to reassociate in an ordered structure. Two or more starch chains initially form a simple juncture point, which then may develop into more extensively ordered regions and ultimately, under favorable conditions, to a crystalline order.

Corn starch—Common corn starch composed of approximately 25% amylose and 75% amylopectin.

High-amylose corn starch—Starch isolated from a hybrid corn plant that contains greater than about 40% amylose. Some high-amylose corn starches now contain as much as 90% amylose.

Fatty Acid Chain

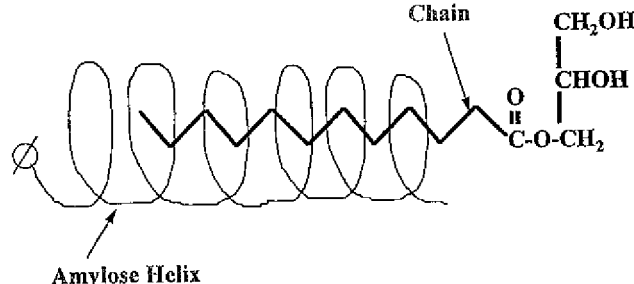
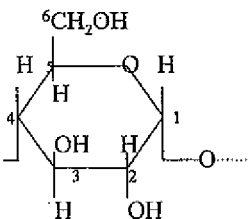


Fig. 1-5. Starch-lipid inclusion complex. An amylose helix is complexed with the fatty acid chain of a monoglyceride.

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 ylopectin are listed in

ly linear polymer com-
 ucopyranose (Fig. 1-3).
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